UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,751	08/07/2000	BERTIL R.R. PERSSON	U012883-2	9637

7590 06/26/2003

LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NY 10023

EXAMINER
OROPEZA, FRANCES P

ART UNIT	PAPER NUMBER
3762	10

DATE MAILED: 06/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/601,751	PERSSON ET AL.	
	Examiner	Art Unit	
	Frances P. Oropeza	3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner is unable to find the newly added limitation of the voltage "producing no destructive perforation of cell membranes in the tissue". It appears this limitation is new matter, and new matter may not be introduced into the application at this point in the prosecution.

2. Claims 21, 30, 32, 35 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

In claim 21, the term VDU needs to be clarified.

In claim 30, "the respective electrode" lacks antecedent basis.

In claims 32, 35 and 36, "the electrode applicator" lacks antecedent basis.

Claim 35 is unclear because it appears "a plurality of electrodes" should be --the plurality of electrodes--.

Claim 30 appears to be redundant of claim 29. Cancellation of claim 30 is suggested.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. Claims 20, 22-26, 28-39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6141582) in view of Hofmann (US 6208893). Mori et al. discloses an iontophoresis system and its control process of current.

As to claim 20, the apparatus for controlling the electric fields comprises an output circuit member (6), read as the voltage generator, that provides voltage pulses to the donor device and the reference device and their associated electrodes (42) to focus the voltage on the restricted region, read as the treatment region. The voltage control member (4), read as the means for distributing the voltage pulses, controls the distribution of the voltage in treatment region. The current detection member (8) and the voltage conversion circuit member (9) perform the function of the impedance measurement unit, that enables the voltage control member (4) to control the voltages, including the amplitude, based impedance measurements so an optimal electrical field is applied to the electrodes and ultimately to the treatment area (abstract; figures 1, 13 and 14; col. 2 @ 62-65; col. 4 @ 66 – col. 5 @ 14; col. 7 @ 38-41; col. 11 @ 26-67; col. 12 @ 22-33). The voltage control member (4), the current detection member (8), and the voltage conversion circuit member (9) enable treatment without damaging the cells. The donor device can be an unpolarized electrode (col. 7 @ 63-67).

As to claim 21, a display member, read as the VDU (screen) shows the configuration of the waveform selected by the control unit on the screen (figure 1; col. 13 @ 4-9).

As to claim 22, the electrodes are common to the control unit and the means for emitting voltage pulses (figure 1).

As to claim 23, the electrodes are positioned such that the electrical field passes through the restricted region (abstract; col. 1 @ 15-26).

As to claim 24, the means for supplying therapeutic substances, genetic material or radiation to the restricted region is shown as drug iontophoresis means (col. 2 @ 60 – col. 3 @ 9).

As to claim 25, the current detection units (A1-A5), read as the sensors, detect the electrical fields formed by the electrodes, and provide feedback to the control unit to enable an optimum electrical field to be created by adjusting the source of the electrical fields and the amplitude of the pulses (figure 2; col. 4 @ 66 – col. 5 @ 14; col. 7 @ 1-5; col. 12 @ 52-67).

As to claim 41, the electrodes are coated with a porous material to accommodate therapeutic substances (figure 14; col. 2 @ 60 – col. 3 @ 9; col. 8 @ 10-16).

Mori et al. disclose the claimed invention expect for:

- the electrodes being alternately excited and only two at a time (claim 26),
- the electrodes being needles (claim 28),
- the electrodes being insulated (claims 29, 30, 31),
- the electrode applicator temporarily fixing the electrodes prior to placement (claim 38),
- the fixture fixing the electrodes in a set pattern. (claim 32),
- providing holes in the fixture enabling the desired treatment pattern to be established (claim 33),

- the electrodes being placed in channels discharged in apertures in the applicator and the electrodes being controlled remotely (claim 34) and
- the cannula enclosing the electrode (claim 39).

Hofmann discloses an electroporation apparatus with connective electrode template for use with interstitial tumors (c 1, l 66 – c 2, l 9) and teaches that it is known to:

- alternately excite the electrodes and only two at a time (claim 26),
- provide electrodes that are needles (claim 28),
- insulate the electrodes (claims 29, 30, 31),
- temporarily fix the electrodes prior to placement (claim 38),
- fix the electrodes in a set pattern using a fixture (claim 32),
- provide holes in the fixture enabling the desired treatment pattern to be established (claim 33),
- place the electrodes in channels discharged in apertures in the applicator and control the electrodes remotely (claim 34) and
- use a cannula to enclose the electrode (claim 39).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the iontophoresis system and its control process of current as taught by Mori et al., with the following elements as taught by Hofmann:

- electrodes being alternately excited and only two at a time (claim 26) to provide an electrical field that optimizes delivery of the drugs (col. 11 @ 30-34; col. 13 @ 46-53),

- electrodes being needles (claim 28) to enable electrode placement in the tissue near the tumor (col. 4 @ 42-49),
- electrodes being insulated (claims 29, 30, 31) to enable targeted stimulation (col. 10 @ 1-4),
- a connector template (22), read as the electrode applicator, temporarily fixing the electrodes prior to placement (claim 38) to enable a treatment pattern to be defined (col. 8 @ 45-54),
- faces (24), read as the fixture, fixing the electrodes in a set pattern (claim 32) to enable the electrodes to be targeted in the tissue (col. 9 @ 8-15),
- holes provided in the fixture to enable the desired treatment pattern to be established (claim 33) (figure 1),
- electrodes discharged in openings, read as the apertures, in the channels (120) formed by the frame (114) and the circuit boards of the applicator (claim 34) to secure the electrodes in position (figure 11 and c 10, ll 53-56), these electrodes being controlled remotely to enable the clinician freedom to monitor and care for the patient (col. 7 @ 46-58), and
- a socket (26), read as the cannula, enclosing the electrode (claim 39) to provide a guide, with conductive contact, for the electrodes (col. 10 @ 56-67).

The Applicant's arguments have been fully considered but they are not convincing.

The Applicant asserts the iontophoresis system disclosed by Mori et al does not impact the cells in the skin. The Examiner disagrees. Mori et al. disclose an invention using electrical

driving force to enhance drug absorption into the living body, read causing the drugs to perforate the cell membranes as they are absorbed into the living body (col. 1 @ 8-26).

The Applicant appears to argue the combined Mori et al. and Hofmann invention does not measure and control the extent of cell perforation. The Examiner disagrees. As discussed in paragraph 3 of this action, the voltage control member (4), read as the means for distributing the voltage pulses, controls the distribution of the voltage in treatment region. The current detection member (8) and the voltage conversion circuit member (9) perform the function of the impedance measurement unit, that enables the voltage control member (4) to control the voltages, including the amplitude, based impedance measurements so an optimal electrical field is applied to the electrodes and ultimately to the treatment area (abstract; figures 1, 13 and 14; col. 2 @ 62-65; col. 4 @ 66 – col. 5 @ 14; col. 7 @ 38-41; col. 11 @ 26-67; col. 12 @ 22-33). The rejections of record are deemed appropriate.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6141582) in view of Hofmann (US 6208893) and further in view of Gough et al. (US 5928229). As discussed in paragraph 3 of this action, modified Mori et al. disclose the claimed invention except for a means in the control unit to manually or automatically accept the waveform.

Gough et al. disclose a stimulation apparatus for treating a tumor and teach that it is known to provide a means in the control unit to manually (col. 9 @ 38-39) or automatically (col. 9 @ 47-50) accept the waveform (col. 9 @ 2-16 and 31-50) to enable alternate control mechanisms. Therefore it would have been obvious to one having ordinary skill in the art at the

time the invention was made to modify the modified iontophoresis system and its control process of current as taught by modified Mori et al. with the manual and automatic waveform control unit as taught by Gough et al. to provide system flexibility so the operator can manually vary the stimulation to identify the optimum therapy and then can automatically provide stimulation of the defined therapy using a programmed stimulation profile enabling the operator freedom to provide additional monitoring and care for the patient during the therapy session.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6141582) in view of Hofmann (US 6208893) and further in view of Eggers et al. (US 5928159). As discussed in paragraph 3 of this action, modified Mori et al. disclose the claimed invention except for sensors detecting the distance between electrodes and the control unit adjusting the electrode voltage based on the distance.

Eggers et al. disclose an apparatus for characterizing and treating tumors and teach that it is known to use sensors to detect the distance between electrodes and to enable the control unit to adjust the electrode voltage based on the distance (col. 6 @ 20-64). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the modified iontophoresis system and its control process of current as taught by modified Mori et al., with the sensors to measure distance between the electrodes and to enable the control unit to provide therapy based on the distance measurements as taught by Eggers to enable interstitial tumors to be more accurately monitored so the treatment parameters can be optimally varied to provided effective treatment for the tumor (col. 5 @ 25-36).

6. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6141582) in view of Hofmann (US 6208893) and further in view of Mawad (US 6428462). As discussed in paragraph 3 of this action, modified Mori et al. disclose the claimed invention except for the electrode consisting of radioactive material.

Mawad discloses a radiotherapy implant and teaches that it is known to use an electrode with a radioactive device to enable placement of radiation near the tumor (col. 3 @ 34-37; col. 5 @ 21-49). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the iontophoresis system and its control process of current as taught by modified Mori et al., with the radioactive therapy implant as taught by Mawad to provide radiotherapy for a patient where combined chemotherapy and radiation therapy is the recommended treatment (col. 1 @ 20-25).

Claim Objections

7. The claims section must begin with the phrase "We claim:" or "What is claimed is:" or a comparable phrase.

In claim 30 it appears "eclectically" should be --electrically--.

Appropriate correction is required.

Abstract

8. The Abstract is objected to because in line 10 it appears "peroration" should be --perforation--. Appropriate correction is required.

Statutory Basis

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Fran Oropeza whose telephone number is (703) 605-4355. The Examiner can normally be reached on Monday – Thursday from 6 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Angela D. Sykes can be reached on (703) 308-5181. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-4520 for regular communication and (703) 306-4520 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0858.

Frances P. Oropeza
Patent Examiner
Art Unit 3762

FPO
6/18/03

Angela D. Sykes

ANGELA D. SYKES
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700